VIEWS FROM THE WEB

The Web offers satellite image suppliers a single site from which to display, advertise and sell their wares. ROBERT BUCKLEY casts a critical eye over their picture galleries.

The incredible growth of the Internet during the past few years has enabled suppliers of satellite images to advertise, display and even sell their data using one medium—the World Wide Web (WWW).

While the sheer number of sites makes an exhaustive review impossible, the aim of this article is to give you an idea of the data that is available on the Internet, both free and for a fee.

Information pile-up

Although "Information Superhighway" has become a cliché, in speed terms the Internet is more of a country lane. The concept of downloading whole map sheets over the Net is one that sane people, even ones with ISDN lines, avoid. Web sites therefore use "Quick Looks" to display catalogues on line. These are subsampled versions of full-resolution images that are compressed as JPEG files, which can be as small as 10 or 20K in size, and which virtually all Web browsers can read.

To select an image from an on-line catalogue of satellite pictures, you first find a Quick Look image to suit your specifications (longitudes and latitudes encompassed, the degree of cloud cover, resolution, type of imagery—multispectral or panchromatic—and so on). You can then order the corresponding image by email or by more conventional means. The data is later supplied on CD ROM, cassette or some other medium capable of carrying large amounts of information.

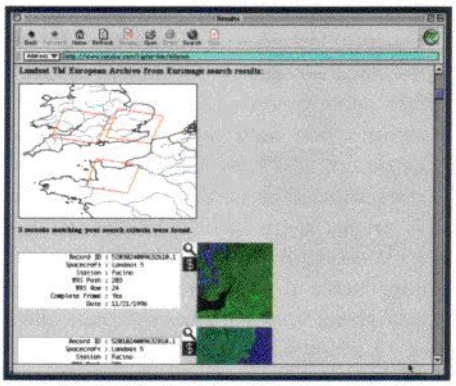
For security reasons, most sites require you to register before they allow access to the full catalogue. This is sometimes free, although most organisations charge a small annual fee. You can normally register by email or an on-line form, but some companies will send you a form to fill in and return by fax or post.

The sites

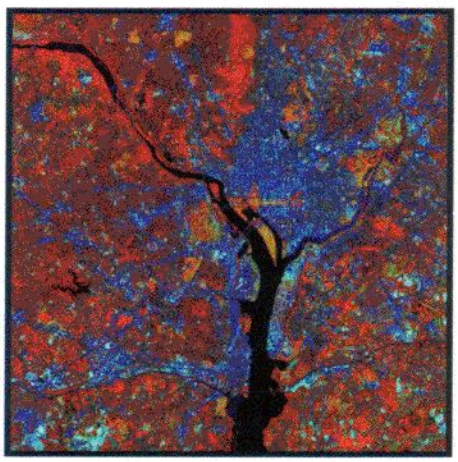
ImageNet
http://www.coresw.com:8000

ImageNet is essentially an on-line shop for remote sensing data purchases. It provides data from a variety of companies including ACRES (Australian Centre for Remote Sensing), SIS (Sovinformsputnik), Spot Image, Eurimage and EOSAT. EOSAT sells Landsat and India's IRS satellite imagery as well as OverVue—Landsat data overlaid with digital elevation models and vectors derived from United States Geological Survey sources.

The home page of ImageNet



Using the Raptor search engine, you can select images from ImageNet's archives and download data.



A Landsat Thematic Mapper image of Washington DC

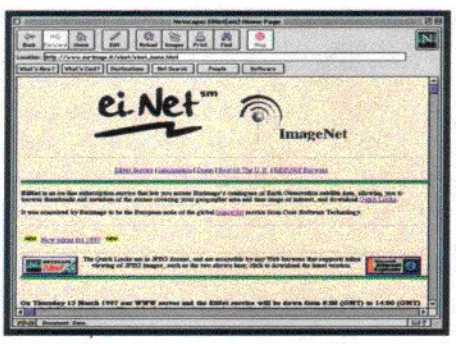
Landsat's Thematic Mapping (TM) scanner offers data at 28.5-metre resolution, while the IRS satellites produce panchromatic data at five-metre resolution—their multispectral capabilities are roughly comparable to Landsat's TM scanner. SIS data from the Russian Space Agency is two-metre, 1:200,000-scale panchromatic imagery. You can search for data by specifying minimum and maximum latitudes and longitudes, and the time period for the archives.

Although this is an attractively designed site, it is clearly just a shop window for the data—the news pages are severely out of date. When I visited the site, all but one story dated from the middle of last year. Registering to access catalogues is free, but you have to wait for an email confirming access before you can use it.

EiNet
http://www.eurimage.it/

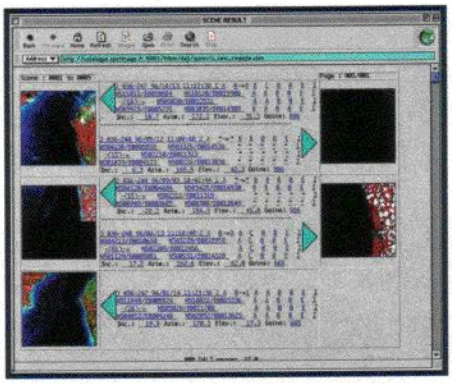
Eurimage has designed EiNet to be the "European node" of ImageNet. It charges a fee of ECU100 to register before you can download any of its Landsat and KVR–1000 (a camera on board the Cosmos satellite) Quick Views, so I didn't get very far into this site. However, you can download RESURS–01 Quick Views at no charge (assuming, of course, that your connection works faster than the glacial pace that mine did, even with a 28.8K modem).

The site designer has assumed that you know exactly what kind of data you require, and I found it almost impossible to discover details of RESURS–01 and KVR–1000's resolution or types of imagery on any of the pages. You can contact EiNet by email for more information and to request a registration form, whereupon you are informed that the data is for internal use only and cannot be reproduced anywhere else without Eurimage's permission.

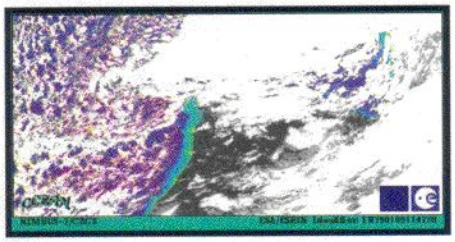


The EiNet home page

The European Space Agency's registration page for earthnet on line



The results of a search of Spot Image's on-line catalogue



An example of European Space Agency Nimbus satellite photography

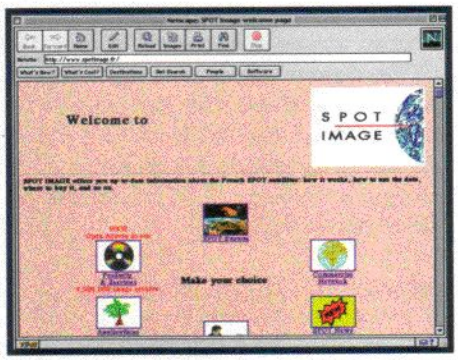
I wasn't impressed to read that I could download data using my "Aplle Macintosh" (sic).

Spot Image
http://www.spotimage.fr

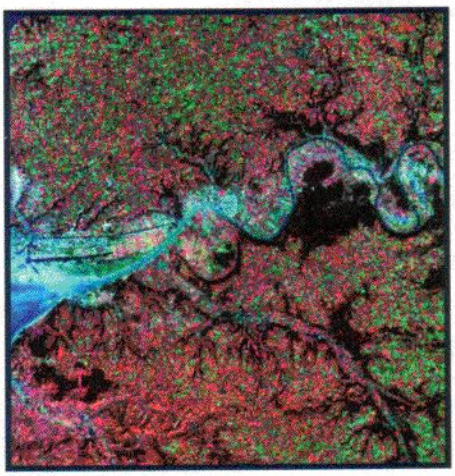
SPOT satellites produce 20-metre multispectral and ten-metre panchromatic data. Since they can acquire images at oblique angles as well as vertically, you can produce stereopairs by combining data from different angles and from different dates—to create digital elevation models, for example. Spot Image is the European company founded to manage the SPOT satellites and their data, and it has over 80 distributors worldwide.

While Spot Image's home page isn't quite as friendly as ImageNet's, it is considerably easier to navigate than EiNet's. It can recognise, for example, which language your browser is configured to and automatically redirect you to the correct pages (if your browser is configured properly). Technical data is easy to find, and a demonstration of the DALI catalogue of SPOT images produces a refreshingly large number of samples.

Spot Image also distributes ERS (European earth observation Radar Satellite) data to French users and customers outside Europe and North America on behalf of the European Space Agency and in conjunction with Eurimage and Canada's Radarsat. Synthetic Aperture Radar (SAR) images, Low Bit Rate products and interferometric products derived from ERS SAR data are available, although only preset sample images can be downloaded. Registration costs FFr500 or $100.



The Spot Image home page (in English)



A Spot picture of the River Seine

European Space Agency
http://services.esrin.esa.it

ESA's site, although quite spartan, is considerably easier to navigate than the more ornate ImageNet. You can register in an instant and gain access to the archive of Landsat, ERS, Nimbus, JERS (Japanese Earth Resources Satellite) and the US's NOAA (National Oceanographic and Atmospheric Administration) data. In common with most sites, regions of interest can be selected by entering latitudes and longitudes or by clicking on a map. Be warned: the database search engine is a little rough around the edges, and some of the Web pages are still under construction.

There is also a link to the global one-kilometre AVHRR (Advanced Very High Resolution Radiometer) project. This is an international effort to acquire, archive, process, and distribute one-kilometre AVHRR data of the earth's land surface. The datasets are accessed using a combined bulletin board, searchable database and FAQ (frequently asked questions) that my browser insisted on calling "Webfiing". Don't even think of asking for detailed information about this: the on-line explanation consists entirely of marketing jargon, and you will find it easier to simply explore the system. Web programmers, though, are offered the opportunity to "validate" the site's HTML.

Data can be ordered off-line for a fee, but up to 10Mb of compressed data can be downloaded free using the Web or FTP (File Transfer Protocol). You select the area you want by entering a latitude-longitude boundary box or clicking on a world map. Neither method seems particularly good, since the former produced no data the first time I tried it (in fact, the server program directed me to the wrong directory for downloading the dataset), and the latter ordered me a beautiful picture of the Atlantic Ocean rather than of mainland Britain as I had requested. Connection to the FTP server was also spectacularly slow.

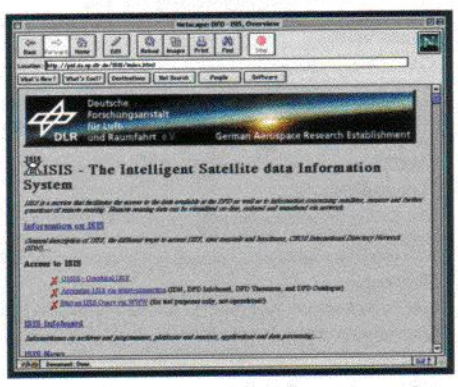
Again, you have to register to use this service using a browser form, but the process is almost instantaneous.

Radarsat
http://radarsat.space.gc.ca

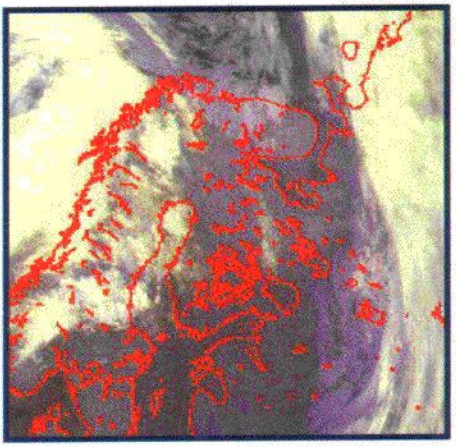
Radarsat's pages are written in both French and English, but are otherwise unremarkable. The site has been designed to give information about the Radarsat network of distributors and the satellites themselves, rather than to provide data on line.

German Aerospace Research Establishment http://pid.da.op.dlr.de

This German remote sensing data centre's archive is quite extensive, with information



The ISIS information retrieval system at the German Aerospace Research Establishment



A sample AVHRR image from the German Aerospace Research Establishment's catalogue

from Landsat, IRS, Nimbus, Meteor, SPOT, Seasat and NOAA satellites. At present, however, the only real way to download data from the centre's archive is by using its ISIS client software for Windows on PCs and Openwin on Sun systems. A text-based search engine for access via the Web to Quick Looks is still in the experimental stage, but masochists might consider using telnet access to the system. The site is written in German and English.

Security and speed

At the moment, Internet-based commerce is still in its infancy—this is true for every market sector, not just satellite data resale. The biggest problems to be overcome are security—the need to be sure that credit card numbers and bank account details cannot be intercepted—and speed. For imagery, the latter is the major stumbling block because of the sizes of files involved. Even ISDN lines are too slow and are almost being matched for speed by the latest 56.6Kbps modems. At these speeds, a 110Mb file can still take between one and four hours to download.

Until the advent of cable modems and the widespread use of fibre-optic networks, it will be hard for Web sites to provide much more than catalogues through which buyers can place orders.

The sites detailed here are all brave attempts to use the Web for more than providing PR information. None are cutting edge, the most advanced features being the use of frames and of CGI-scripts for security and search engines, but all more or less serve the purposes for which they were intended. Until the Web truly becomes the "Information Superhighway", site managers' ambitions will far exceed what the technology can deliver. G

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